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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/630,984	07/30/2003	Tomokazu Kakumoto	15162/06070	7739

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EXAMINER

HENN, TIMOTHY J

ART UNIT	PAPER NUMBER
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2622

DATE MAILED: 11/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/630,984

Applicant(s)

KAKUMOTO ET AL.

Examiner

Timothy J. Henn

Art Unit

2622

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 19-24 and 29 is/are rejected.
- 7) ☒ Claim(s) 8-18 and 25-28 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 July 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. Figure 22 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Objections

3. Claims 4, 5 and 14 are objected to because of the following informalities:

[claim 4]

Claim 4 contains the limitation of operating "at a same timing with respect to all the pixels", however there is insufficient antecedent basis for this limitation. For the purposes of art rejection, the limitation will be read as operating "at the same timing with

respect to the plurality of sets of pixels”.

[claim 5]

Claim 5 contains the limitation “after the sample hold circuits are rest”, for the purposes of art rejection this limitation will be read as “after the sample hold circuits are reset”.

[claim 14]

Claim 14 is dependant on claim 1 and contains the limitation of “disconnecting an output signal line and the capacitor”. However, claim 1 does provide sufficient antecedent basis for “the capacitor”. For the purposes of art rejection, claim 14 will be read as depending on claim 12 which provides proper antecedent basis for a capacitor.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-3, 6, 7, 19, 22-24 and 29 are rejected under 35 U.S.C. 102(e) as being anticipated by Mabuchi (EP 1178674 A1).

[claim 1]

Regarding claim 1, Mabuchi discloses a solid-state image sensing device having at least one pixel (Figure 1, Item 10), said pixel comprising: a photoelectric conversion section for outputting an electric signal according to a quantity of incident light (Figure 1, Item 11); and a sample hold circuit for sampling and holding the electric signal from the photoelectric conversion section and outputting the sampled and held electric signal as an image signal (Figure 1, Item N11), wherein a reset voltage for resetting the sample hold circuit obtains at least two different values (Figure 1, Item B1; Figure 2, N11).

[claim 2]

Regarding claim 2, Mabuchi discloses an electric signal which is a voltage signal and when the electric signal is sampled and held by the sample hold circuit, the reset voltage is set to a value (Figure 2, N11, 0.5V) which is different from the value of the voltage for resetting the sample hold circuit (Figure 2, N11, 2.5V).

[claim 3]

Regarding claim 3, Mabuchi discloses a switch for electrically connecting and disconnecting the photoelectric conversion section and the sample hold circuit (Figure 1, Item 12).

[claim 6]

Regarding claim 6, Mabuchi discloses a reset voltage which is set to a first voltage during pixel reset time where the pixels are reset (Figure 2, N11, 2.5V) and the reset voltage is set to a second voltage during time other than the reset time (Figure 2, N11, 0.5V) and the pixel reset time includes starting time of the reset of the sample hold circuits through time before output of the image signals from the sample hold circuits

(Figure 2, R1, B1', N11, 0.5V).

[claim 7]

Regarding claim 7, Mabuchi discloses a reset voltage which is set to a first voltage during the sample hold circuit reset time where the sample hold circuits are reset (Figure 2, N11, 2.5V) and set to a second voltage during time other than the sample hold circuit reset time (Figure 2, R1, B1', N11, 0.5V).

[claim 19]

Regarding claim 19, Mabuchi discloses at least one pixel comprising an output circuit for amplifying the voltage output from the sample hold circuit and outputting the image signal (Figure 1, Item 13).

[claim 22]

Regarding claim 22, Mabuchi discloses a FET switch through which the reset voltage is applied to the sample hold circuit (Figure 1, Item 14).

[claim 23]

Regarding claim 23, Mabuchi discloses applying the reset voltage when the FET switch is turned on (Figure 2, R1, N11).

[claim 24]

Regarding claim 24, Mabuchi discloses a first reset value (Figure 2, N11, 2.5V) and a second reset value (Figure 2, N11, 0.5V).

[claim 29]

Regarding claim 29, Mabuchi discloses a second value which is set so as to suppress a leakage of electric charge from the sample hold circuit (Figure 2, N11, 0.5V; Paragraph 0033).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 4, 5, 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mabuchi (EP 1178674 A1).

[claim 4]

Regarding claim 4, Mabuchi discloses a plurality of sets of pixels (Figure 1), but does not disclose activating the plurality of sets of pixels simultaneously as claimed. Official Notice is taken that instead of interlaced readout, such as the readout disclosed by Mabuchi, progressive readout can be used to scan and readout all pixels in the same readout operation. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to integrate all of the plurality of sets of pixels on the array of Mabuchi at the same time and to read them out in a progressive readout operation in order to create a full image without problems associated with interlace readout such as motion between fields.

[claim 5]

Regarding claim 5, Mabuchi discloses activating a switch after the sample hold circuits are reset so that electric signals from the photoelectric conversion sections are given to the sample hold circuits (Figure 2).

[claims 20 and 21]

Regarding claims 20 and 21, Mabuchi lacks outputting electric signals in logarithmic format. Official Notice is taken that it is well known in the art to allow selection between linear readout and logarithmic readout for pixels to allow for changes in dynamic range out of the image sensor. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to allow for linear and logarithmic readout from the image sensing device of Mabuchi to allow for changes in dynamic range.

Allowable Subject Matter

8. Claims 8-18 and 25-28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

[claims 8-18]

Regarding claims 8-18, the prior art does not teach or fairly suggest a photoelectric conversion section including a photoelectric conversion circuit and an integrating circuit combined with a sample and hold circuit with a plurality of reset voltages as claimed. While photoelectric conversion circuits as claimed and sample and hold circuits as claimed are known individually, the combination is not taught or

suggested in the prior art.

[claim 25-28]

Regarding claims 25-28, Mabuchi discloses a first voltage for resetting the sample and hold circuit and a second voltage set to suppress leakage through transfer transistor 12. However, Mabuchi does not disclose setting the second voltage to suppress leakage through reset transistor 14.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

i.	Merrill et al.	US 6,882,367
ii.	Tsai	US 7,012,645
iii.	Lee et al.	US 2005/0083422
iv.	Hoiser et al.	US 6,847,400
v.	Zhao et al.	US 2004/0080646

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy J. Henn whose telephone number is (571) 272-7310. The examiner can normally be reached on M-F 9:00 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivek Srivastava can be reached on (571) 272-7304. The fax phone

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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TJH
10/27/2006


TUAN HO
PRIMARY EXAMINER